

What is claimed is:

1. A loudspeaker comprising:

an enclosure including a folded horn having a mouth;

a plurality of acoustic transducers housed in the enclosure;

a throat associated with each transducer for coupling the output of the transducer into the folded horn; and

throat outlets being differentially spaced from the mouth.
2. A loudspeaker as set forth in claim 1, further comprising:

a source of an acoustic range signal; and

transducer drive signal processing circuitry having an individual channel for each of the audio transducers, the individual channels each being coupled to receive the acoustic range signal and each channel including a time delay element for delaying a signal in a channel as a function of the distance of the throat for the audio transducer associated with the channel from the mouth of the folded horn.
3. A loudspeaker as set forth in claim 2, further comprising:

a plurality of high pressure chambers, at least one acoustic transducer being positioned to direct sound energy into each high pressure chamber, each high pressure chamber further having an elongated port to the folded horn providing a throat for the high pressure chamber.
4. A loudspeaker as set forth in claim 3, each channel of the transducer drive signal processing circuitry further comprising:

a band pass filter receiving the acoustic range signal and producing a filtered signal

therefrom;

the time delay element receiving filtered signal and producing a delayed, filtered signal; and

a dynamic phase adjustment element receiving the delayed, filtered signal and adjusting the phase of the signal as a function of frequency to produce a drive signal for an acoustic transducer.

5. A loudspeaker as set forth in claim 4, further comprising:

a summing section of the folded horn into which each throat is coupled.

6. A loudspeaker as set forth in claim 5, further comprising:

the acoustic transducers having a small vibrational surface area relative to the predominant range of frequencies to be reproduced; and

a plurality of sealed back chambers, one sealed back chamber housing each acoustic transducer.

7. A loudspeaker as set forth in claim 6, further comprising:

the audio transducers being positioned with respect to one another in a linear array, one to each high pressure chamber.

8. A loudspeaker as set forth in claim 6, further comprising:

a plurality of acoustic transducers coupled to each high pressure chamber.

9. A loudspeaker as set forth in claim 4, wherein the band pass filters, delay elements and dynamic phase adjustment elements are realized in a digital signal processor.

10. Apparatus comprising:

a plurality of acoustic transducers including at least two substantially identical acoustic transducers;

a plurality of high pressure chambers with an acoustic transducer associated with each high pressure chamber, including two high pressure chambers of substantially the same volume into which the output of one each of the two substantially identical acoustic transducers is directed;

an extended acoustic port from each high pressure chamber; and

a horn having a summing section connected to a radiating end of each extended acoustic port and a mouth, the radiating ends of the extended acoustic ports associated with the two high pressure chambers of substantially the same volume being differentially spaced in terms of acoustic propagation time from the mouth.

11. Apparatus as claimed in claim 10, further comprising:

means for coordinating operation of the two substantially identical acoustic transducers so that the pressure waves from the radiating ends of the acoustic ports reinforce one another.

12. Apparatus as claimed in claim 11, wherein the acoustic transducers are aligned side by side.

13. Apparatus as claimed in claim 11, wherein the acoustic transducers are housed in sealed back chambers.

14. Apparatus as claimed in claim 11, the means for coordinating further comprising drive circuitry for the substantially identical acoustic transducers including delay means for synchronizing the pressure waves upon their meeting in the summing section.

15. Apparatus as claimed in claim 14, the drive circuitry including a pass band filter associated with each of the substantially identical acoustic transducers and a dynamic phase adjustment element for each of the substantially identical acoustic transducers.